

## Letter

# Fibromyalgia and sleep-disordered breathing: the missing link - author's response

Jean Eisinger

Infomyalgies Unit, Centre Hospitalier, 83056 Toulon cedex, France

Corresponding author: Jean Eisinger, [infomyalgies@orange.fr](mailto:infomyalgies@orange.fr)

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Fibromyalgia pathophysiology is a labyrinth where "our understanding has grown from counting tender points to an evolving concept of subgroups and a countless variety of dysfunctional biochemical and metabolic interactions" [1].

Sleep disorders have been reported in fibromyalgia patients [2], including daytime somnolence and tiredness, and non-restorative and fragmented sleep with higher occurrence of arousals, often associated with breathing-related disturbances. Electroencephalogram findings exhibit alpha-delta sleep and a reduction of slow-wave sleep [2,3]. More sophisticated studies may identify upper airway resistance syndrome or obstructive sleep apnea-hypopnea syndrome associated with increased risk for cardiovascular events [4].

Conflicting results have been reported on the prevalence of fibromyalgia observed in patients with sleep apnea; it was significantly increased versus a control group according to Germanowicz [4], but was not according to Plantamura and colleagues [3]. It is noteworthy that Moldofsky [5], 30 years ago, demonstrated the induction of a musculoskeletal pain syndrome by selective deep sleep deprivation. These findings allow a better understanding of the subtle mechanisms of fibromyalgia, including decreased levels of serotonin and tryptophan, increased tumor necrosis factor alpha and interleukin 6 [4] or reduced growth hormone secretion.

Recently, Martinez and Cassol [2] defined sleep-disordered breathing as a missing link between fibromyalgia, metabolic syndrome and orthostatic intolerance. Rather than a missing link, it could be one of the many links - mainly biological but also biomechanical, such as myofascial trigger points - that probably complicate the diagnosis and management of functional diseases and chronic pain.

These fibrolinks were roughly summarized in complex figures presented at the Myopain 2007 congress in Washington DC, and have recently been published [7]. This labyrinth concerns: neurotransmitters or hormones; 'nociceptive' or 'antinociceptive' receptors [7]; inflammatory cytokines and insulin resistance [7]; glucose metabolism and nitric oxide/ endothelin imbalance as well as apoptotic pathways or reactive oxygen species; and genetic disorders or neuro-vegetative disturbances [2]. Whatsoever, the rediscovery of the sleep-disordered breathing link deserves further investigation, in order to avoid or limit the eternal return of antidepressant and anticonvulsant therapies, which are often deceiving and, with respect to some recent drugs, poorly tolerated by fibromyalgia patients.

## Competing interests

The authors declare that they have no competing interests.

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